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Biological and Phytosenological Features of the *Orchidaceae* Juss. Family Species New for the Nakhchivan Autonomous Republic Flora

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This article presents systematic, biological and phytosenological characteristics of species *Neotia ovata* (L.) Bluff & Fingerh of the *Neottia* Guett genus, *Orchis simia* Lam. of the *Orchis* L. genus and species *Anacamptis pyramidalis* (L.) L.C.Rich of the *Anacamptis* genus.

Keywords: *Orchidaceae, Orchid, biological features, phytocenosis, oval secret flower, Listera, Neottia, ovata, Orchis Simia Lam, Orchis simia, Anacamptis pyramidalis, pyramidal orchid*

INTRODUCTION

The diversity of plant species in the Nakhchivan Autonomous Republic is primarily related to the diversity of eco-geographical conditions, the historical development of the kaynazoy Pleistocene eras, especially the development history of the biological components of landscape, as well as to its location on the borders of three botanical regions, and having numerous altitudes zones. In a very short distance, it has different natural-geological features, ranging from Arazboyu plains to the Gapijik peak, where the desert, semi-desert, mountain desert, xerophyte bush, subalpine forest, alpine, rocky and glacier landscapes are located (Babayev, 1999).

The research object is located on the west slope of the Zangezur mountains, in the upper and lower parts of the Duylunchay basin. The main part of the area bordered by the peaks and mountains such as Tokhumgedik (3106 m), Khoshkeshin (2081 m), Yokhush (2364 m), Pazbashi (2613 m), Gendagh (1780 m) etc., is located in the cold climate zone, with characteristic dry summer. Optimal radiation, temperature, and humidification here, make favorable vegetation condition for *Orchidaceae* species. Compared to other places of Azerbaijan, the radiation amount of 145 kcal / cm^2 is relatively more than at other relevant altitudes. The absolute maximum temperature is +320°C, the minimum temperature is -190°C and the average annual temperature is +110 C. The average thickness of the snow cover varies from 19 to 24 cm depending on the altitude change. Snow cover prevents the root system of perennial plants and provides enough humidity in the soil. On the active layer, the humidity in the brown soils reaching to 30-35mm ensures normal growth of the plants (Mirzəyev, 1972).

One of the most important plant species in the Nakhchivan Autonomous Republic is *Orchidaceae* Juss. One of the species included into the *Orchidaceae* family is *Neotia* Guett. Representatives of this species have their own unique beauty and spreading areal.

MATERIALS AND METHODS

The article is based on the researches carried out in the Nakhchivan Autonomous Republic. The *Neotia ovata* (L.) Bluff & Fingerh species of the *Neottia* Guett. genus, *Orchis simia* Lam. species of the *Orchis* L. genus that grow on the western slope of the Zengezur mountains, on the upper part of the Duylunchay basin, in the midland and highland and the Mezre village and the *Anacamptis pyramidalis* (L.) L.C. Rich species of the *Anacamptis* genus from the Batabat massif have been taken as the research objects.

The data of previous researches collected in "The Azerbaijan Flora" (Флора Азербайджана, 1952), "The USSR Flora" (Флора СССР, 1935), materials of Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity and the information base of the APG IV system were used in the current research.

In addition, there have been studied materials collected by researchers working in the field of biology in the autonomous republic in different years.

DISCUSSION AND CONCLUSIONS

Most of the *Orchidaceae* species are of decorative importance, and all of them deserved to be protected.

Genus: *Neottia* Guett. - Neottia. The height is 20-40 cm. Rooty stem is horizontal and intense and covered with thick root cover. The plant is yellowish-brown. The leaves are scabbard and

round. The flower group is thick (the bottom is empty), and it is15-20 cm long. The perianth are dark-light brown; the leaves are 4-5 mm in length and they are oval. The labium is 10 mm in length, and darker than others. Spread in the mountain forests.

The *Neottia ovata* (L.) Bluff & Fingerh species including into the *Neottia Guett* genus are perennial, mesophytes that grow in the upper part of the Duylunchay basin, in the midland and highland, around the Mezre village of the Ordubad region. They are observed in the lowland, in the mixed forests that are favorable for this area. They occur in some areas (2-3 pieces) or in small groups in the walnut and quince gardens that are newly planted in meadows. In the lower and middle mountain ranges, mountain slopes they are observed in the mixed forests, shrubberies, meadows, shady places, in small groups (2-3 pieces). The period of flowering and fruiting is May and June (Figure 1).



Fig. 1. *Neottia ovate.*

Neottia ovata (L.) Bluff & Fingerh. - Oval bird nest orchid is a perennial herb. The root is short and thick (Fig. 1). The leaves are situated by 2 opposite each other, wide-oval-ellipse, width up to 6 cm and thick. There are 1-3 round leaves in the upper part of stem. The flower group is long and empty, the bract is oval. Flower stem is short and periant leaves are 3-4mm in length and they are green. Two outer leaves are strait, oval and blunt, but two inner leaves are lanceolate shape.

Inflorescence is a brush shape with a lot of flowers. The flowers are long enough, small, curved, round, sometimes greenish, yellowish-green or dark violet. The torus is approximately the same in length, oval, elliptic or scarecrow, free. The labium is 10 mm in length, yellowish, two blunt lobed. Labium is actually 2or 3 times longer than outer part of the torus, flat, without spur, lingulate or wedgeshaped, with two wings. The stalk is strait and short. The beak is geared. The pollen bowl is on the top. The height is 20-40 cm. It spreads in the humid forests and meadows. It is observed in the upper part of the Duylunchay basin of the Ordubad region, on the banks of the Mezre river, in the lowlands and midlands, mountain slopes, in the mixed forests, shruberries, meadows, in the shady places in smal groups (2-3 pieces).

Oval bird nest orchid is a short rhizome perennial herb, hemicryptophyte, 20-30 cm, flowering period is May. It is observed in the middle mountainous ranges, in the woods, in humid places, in shady forests, in the shrubberies. It is pluregional. This species has been described in Europe. It has spread in the west, north, the center of the lesser Caucasus, and in Lenkoran in Azerbaijan. It is found in the Caucasus in Dagestan, East, West Transcaucasia and inTalish region. Common spreading: Europe, North, South West (Turkey), East Asia, North America.

It should be noted that according to molecular-philogenic studies the *Listera* genus can be included into the genus *Neottia* Guett. (Chase et al., 2003). Such kind of combining was also proposed on the basis of the analysis of morphology of flowers (Szlachetko, 1995) (Определитель сосудистых растений Тамбовской области, 2010).

In some sources, *Listera ovata* (L.) R.Br. that was called *Neottia ovata* (L.) Bluff & Fingerh species was included into the *Listera* R.Br. the genus. (Флора СССР, 1935; Флора Азербайджана, 1952; Миняев и Конечная, 1976; Саксонов и Конева, 2006; Перебора, 2007).

Euro + Med PlantBase - The information resource of the Euro-Mediterranean plant diversity estimates the latest information from all regional and national flora. According to that source and the APG IV system, the genus *Listera* R.Br. including into the genus *Neottia Guett*. Hist. Acad. Roy. Sci. Mém. Math. Phys. (Paris, 4to) 1750: 374 was included into 1754. Species *Listera ovata* (L.) R.Br. adopted as a species *Neottia ovata* (L.) Bluff & Fingerh. Comp. Fl. German., Ed. 2, 2: 435 was adopted as a synonym for the species 1838 (http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=90573&PTRefFk=8000000) (Fig. 1).

Genus: *Orchis* L. - All flower perianth leaves, or only three upper leaves have been folded as helmets. The two inner floral lines of perianth are linear-lengthened and form a helmet. The labium is three or four sliced, tourned downwod, upper part is bare or covered with small suckings, flat and folded, cylindrical, cone-shaped or curved; the capsule stalk is short.

The pollen grows with an abutment and usually it is ellipsoid with parallel slots. There is a cranberry outcrop locating between its slots; pollinators provided with two gloves, which are located in a double-glove pocket, are pin shaped. The ovary is

folded. The pistil opening is covered. The root is round, oval or ellipsoid. The plant has underground roots.

Orchis simia Lam, a new species for the Nakhchivan flora, discovered by us - mainly grows in shrubberies, forest foliage and mountain meadows. In the low and middle mountain ranges, mountain slopes, in mixed forests, shrubs, meadows, shady areas were observed in smaller groups (2-3 individuals). Flowering and fruiting season is April-May (Figure 2).

O. simia Lam., Fl. France, III, 507 (1778). - O. tephrosanthos. ViII, M. B., 364; Ledeb., IV, 62. is a perennial plant. Roots are oval or elliptic. The stem is 25-50cm in height. The leaves are 4-5 lancet shaped, with 5.5-15 cm length and 2-3.5 cm width. The leaves are blunt or blunty-sharpened. There is 1-2 vaginas covered with leaves above them, on the stem.



Fig. 2. *Orchis simian.*

Inflorescence is a thick, multiflowered. It is 3-7 cm in height and 3-4 cm in width in the sprouting period. The bract is 1.25-3 (4) cm and it is oval or oval-lancet, sharpened, whitish. Outer leaves of the periant are pale-purple-pinky or pale-purple-violet, basically adjacent, oval-lancet, strongly sharpened, with three vessels, 1-1.4 cm in length. The periants are not equal. The inner two leaves of the periants are sharpened, with one vessel, white and a bit shorter than the outer leaves. The labium is pale-pinky or pale-rosy. Its central lobe is a bit pale-violet till the last slices. It is 7.5 mm in length with 2 narrow-wound folded slots, and with a longitudinal-linear middle end, with two long-linear folded slices 8-11 mm long and between them there are small teeth 2-3 mm in length; the length of the labium is 1.4-1.5 cm; The spur is 4-5 mm in length and 1.5- 1.75 mm in thickness, twice shorter than the ovary, down and slightly twisted (Флора СССР, 1935).

It spreads throughout the Caucasus, Lankaran. Common Spreading zones: Atlantic and Central Europe, the Mediterranean Basin, Balkans, Less Asia - South Europe.

There has been provided information on *Orchis* L. genus belonging to the Nakhchivan AR flora in the previous sources (Talıbov and Шbrahimov, 2008).

For the first time, as a result of the research conducted in the Batabat massif, the *Anacamptis pyramidalis* (L.) L.C. Rich species of the Anacamptis. – Anacamptis genus was found to spread in the Nakhchivan flora.



Fig. 3. *Anacamptis pyramidalis.*

Genus: *Anacamptis* Rich. - Anacamptis. The flower is red, sometimes pink or white, with a length of 5-6 mm. The parianth leaves are in the shape of oval-triangular. The labium is deep in a three-sided area, its slots are tight and long, and the labium end is covered with comb shaped protuberances. The spur is thin. The flower group is in the form of a dense, oval- pyramidal 4-5 cm length, and 3 cm width. The leaves are narrow-lancet shaped, 30-60 cm in height. Spread in shrubberies and medows in the middle mountain ranges.

Anacamptis pyramidalis (L.) L.C. Rich. – *Pyramidal orchid* is a perennial plant. The rubes are whole, round or sometimes elliptical. The stem is 25-65 cm in height. The leaf line is in the shape of a wedge covering the body, slightly narrower or slightly sharpened, and the top is the vagina shaped. Flower group is thick, multicolored, oval-pyramidal. The bract is long-sharpened and shorter than the flowers. Flowers are purple-red, sometimes red and even white. The outer leaves (perianth) are 4-6 mm in length, medium-sized, the sides are often two, the entrances are single-core, nearly equal to those in the overs. The labium is triangular with long slices, rounded or round cut. The spur is 13-14 mm in length.

The species have spread in the Samur-Shabran Plain - The Greater Caucasus (GC) (Guba Mountain Massif) - GC, East - GC, West - Kura - Plateau - Lesser Caucasus (LC), North - Central Asia -

Lankaran Mountains - Lankaran Plains - Low Mountain Range up to the middle mountain ranges - on forest edges, shrubberies, orchards and grassy rocks. Common spreading zones: Atlantic and Central Europe, Western and Eastern Mediterranean, Balkan Peninsula - Lesser Asia, Iran. It has been described in Switzerland (Picture 3).

Based on literary sources and researches in the Nakhchivan Autonomous Republic, the genus and species included into the *Orchidaceae* Juss family are classified as follows:

Super Ordo*: Lilianae*
Ordo: *Asparagales*
Familia: *Orchidaceae* Juss.
Subfam .: *Neottioideae* Lindl.
1. Genus: *Epipactis* Zinn
1 (1) *Epipactis microphylla* (Ehrh.) Sw.
2 (2) *E. palustris* (L.) Grantz
3 (3) *E. veratrifolia* Boiss. et Hohen.
2. Genus: *Neottia* Guett.
4(1) *Neottia ovata* (L.) Bluff & Fingerh.
Subfam .: *Orchidoideae*
3. Genus: *Planthera* Rich.
5 (1) *Planthera chlorantha* (Custer) Reichenb.
4. Genus: *Dactylorhiza* Neck. ex Nevski
6 (1) *Dactylorhiza euxina* (Nevski) Czer.
7 (2) *D. salina* (Turcr. ex Lindl.) Soo
8 (3) *D. iberica* (Bieb., Willd.) Soo
9 (4) *D. romana* (Sebast.) Soo [D. flavescens (C. Koch) Holub]
10 (5) *D. umbrosa* (Prof. & Kir.) Nevski (1937)
11 (6) *D. urvilleana* (Stand) H. Baumann et Künkele
12 (7) *D. osmanica* (Kinge) P.F. Hunt & Summerh.
5. Genus: *Orchis* L.
13 (1) *Orchis mascula* L.
14 (2) *O. punctulata* Stev. ex Lindl.
15 (3) *O. simia* Lam.
6. Genus: *Anacamptis* (L.) Rich.
16 (1) *Anacamptis coriophora* (L.) R. M. Bateman, Pridgeon & M.W.Chase
17 (2) *A. laxiflora* (Lam.) R.M. Bateman, Pridgeon & M.W.Chase
18 (3) *A. palustris* (Jacq.) R.M. Bateman, Pridgeon & M.W.Chase, 1997
19 (4) *A. pyramidalis* (L.) Rich.
7. Genus: *Ophrys* L.
20 (1) *Oprhys apifera* Huds.
8. Genus: Gymnadenia R.Br.
21 (1) *Gymnadenia conopsea* (L.) R.Br.

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Naxçıvan Mutar Respublikasının Florası Üçün Yeni Olan Səhləbkimiıər - *Orchidaceae* Juss. Fəsiləsi Növlərinin Bioloji və Fitosenoloji Xüsusiyyətləri

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Məqalədə Səhləbkimilər (*Orchidaceae* Juss.) fəsiləsinin *Neottia* Guett cinsinə aid *Neotia ovata* (L.) Bluff & Fingerh, *Orchis* L. cinsinin *Orchis simia* Lam. və *Anacamptis* Rich. cinsinin *Anacamptis pyramidalis* (L.) L.C.Rich növlərinin sistemayik, bioloji və firosenoloji xüsusiyyətləri haqqında məlumatlar təqdim olunmuşdur.

Açar sözlər: *Orchidaceae, səhləb, bioloji xüsusiyyətlər, fitosenoz, ovalvarı gizli çiçək, Listera, Neottia ovata, Orchis simia* Lam.*, Anacamptis pyramidalis, piramidal səhləb*

Биологическая и Фитоценологическая Характеристики Новых для Флоры Нахчыванской Автономной Республики Видов Семейства Орхидные - *Orchidaceae* Juss

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В статье представлены данные о систематических, биологических и фитоценологических особенностях представителей семейства Орхидные (*Orchidaceae* Juss.): вида *Neotia ovata* (L.) Bluff & Fingerh, относящегося к роду *Neottia* Guett, *Orchis simia* Lam. – род *Orchis* L. и *Anacamptis pyramidalis* (L.) L.C.Rich –род *Anacamptis* Rich.

Ключевые слова: *Orchidaceae, орхидея, биологические особенности, фитоценоз, скрытый цветок овальной формы, Listera, Neottia ovata, Orchis simia* Lam.*, Anacamptis pyramidalis, пирамидальная орхидея*